

## Meeting Minutes

for the 9th experts meeting of IHRA pedestrian protection

8-10 May 2001, Honda Pavilla, Gotemba, Japan

### Day 1 (Tues. 8 May) Honda Pavilla

#### 1. Opening of the meeting

The chairperson, Mr. Mizuno opened the meeting at 9:00 beginning with an expression of appreciation for the efforts Mr. Tanahashi extended in making the necessary arrangements for the meeting. The chairperson encouraged active participation from those present and asked for their positive contributions in finalizing at least a draft of procedures for head tests.

Mr. Naito, director of the Ministry of Land, Infrastructure and Transport, welcomed the members and said that the Japanese government will establish a domestic regulation on pedestrian head protection in 2002 based on these IHRA activities, and along this line they have been studying preliminary results of evaluations and test procedures.

#### 2. Roll call of delegates

(See attached sheet Appendix 1)

#### 3. Adoption of meeting agenda

The draft agenda was approved with the following minor changes.

- Strike Mr. Bilkhu (AAM) from **Item 8** "Up-to-date information"
- Strike Mr. Saul (NHTSA) from **Item 8** "Up-to-date information"
- Add a presentation by Mr. Lawrence to **Item 6**: Test procedures
- Add the last meeting's discussion on WAD to **Item 9**: Others

#### 4. Approval of draft minutes from the 5th Meeting

The draft minutes were approved with the following changes.

- Change "Meeting dates" to 5 Feb, 6 Feb, and 7 Feb
- Change "PEDS" to "PCDS" on page 3
- Change the sentence on page 4 "Head mass and others" as follows:

Mr. Lawrence suggested the consequences of using average effective mass should be ~~used~~ considered, and that appropriate ~~measures~~ mass should be considered

chosen by considering the worst case. ~~He recommended that the static mass be used.~~

- Change the sentence on page 5 "Decision of impact area based on WAD" as follows:

Mr. Tanahashi reported that he had classified the distribution of height and WAD.

Mr. Tanahashi reported that he had classified the distribution of height (estimated from victims' ages) and.....

- Change *CONCLUSION 3* on page 6 as follows:

*From observation of accident analysis, 1400 WAD 2400 is adult head impact zone, while a 900 WAD 1700 is the child head impact zone.*

- Change *CONCLUSION 5* on page 8 as follows:

*However, it may be difficult to achieve ~~as a particular matter~~ in practice.*

*It is also anticipated that moment of inertia may need to be adjusted for ~~particular~~ practical considerations.*

- Change the sentence on page 10 as follows:

Mr. Lawrence proposed that "HIC 15=700" ~~would~~ may be appropriate when it is important to assume.....

Mr. Ishikawa ~~countered~~ commented that the time duration for bonnet contact was generally less than 15msec.

- Change *CONCLUSION 8* on page 12 as follows:

~~non-voting~~ advising members

~~ACEA supported Option 3~~ could support Option 2.

- Strike the following sentence:

~~In addition, following the vote, Mr. Tanahashi said that he had a misapprehension regarding the options, and asked to have his vote changed to Option 2.~~

## 5. IHRA Steering Committee Report

Mr. Mizuno reported that Mr. Owings of NHTSA announced at the Steering Committee meeting held on March 4th, that he would make a presentation at the next WP29, and that members have discussed the ITS Working Group activities and had conducted a self critical review.

He also identified the key issue at the meeting as the need for the continuation of IHRA/WGs, and said that discussions had focused on the consolidation of "Advanced frontal crash WG" and "Compatibility WG". A majority of the members supported the consolidation, however the schedule and management of WG have yet to be decided.

Mr. Mizuno asked the members to submit comments on his draft proposal (new term of reference) (IHRA/PS/197) by May 18, or preferably, during their stay in Gotemba.

## 6. Test procedures

### ( 1 ) Adult head test procedure

Mr. Lawrence presented a draft (IHRA/PS/118R3 modified by GL) of the "Adult head test procedure," which was a rephrasing of the original draft (IHRA/PS/118R3) and the following disputes arose concerning the main points of his proposed amendments:

Mr. Mizuno asked the members to submit opinions and suggestions on this draft within thirty days.

The key points in dispute are as follows:

- Mr. Lawrence requested that definitions for the base of the A-Pillar and the side reference line be added to the draft.
- Regarding the definition of the "upper windscreen frame", Mr. Lawrence proposed that it be defined as the rear of the windscreen frame, however, industry delegates opposed this on the grounds that the internal structure cannot be easily identified.
- Mr. Tanahashi offered an alternative proposal that it be defined as the end windscreen.
- Mr. Akiyama suggested using the concept of "stick angle", which Mr. Lawrence recognized as practical.

## **CONCLUSION 1 (Action)**

***Mr. Tanahashi will prepare a diagram adopting the concept of "stick angle", revise Page 4 of the Draft (IHRA/PS/118R3 modified by GL), and circulate the revision among the delegates as soon as possible.***

Mr. Lawrence reminded OICA members to submit their definitions for the base of the A-Pillar, and the A side reference line beyond the base of the A-Pillar which had been assigned at the previous meeting.

Mr. Tanahashi presented two drafts, (IHRA/PS/113R6) and (IHRA/PS/118R4) as alternatives to Mr. Lawrence's draft, and outlined the revised portions.

Mr. Lawrence raised the question of which speed range should be used, that is, a range of from 30 to 50km/h or an incremental set of 30, 40, and 50km/h. The delegates agreed to leave it at the 30 to 50km/h range until further determinative information is available from simulation tests.

Mr. Konosu of JARI presented a comparative analysis and elaboration on the validation of models used by NHTSA, JARI, and RARU, as JARI was requested at the previous meeting.

## **Day 2 (Wed. 9 May) Honda Pavilla**

Mr. Mizuno requested the members' recommendations on how best to use the simulation results.

Mr. Ishikawa suggested that they apply the data to the sensitivity analysis of models.

Mr. Ishikawa pointed out that the sensitivity analysis should provide better understanding of the general tendency for the head impact speed to be less than the vehicle speed on the bonnet, higher or equal on the windscreen, and for the impact angle on the bonnet and windscreen to differ.

Mr. Lawrence disagreed on the basis that output data from simulations are too varied, making it difficult to identify any specific tendency or correlation between the vehicle shape and the output data, and therefore he opposed the use of relying on averages taken from the data.

Mr. Janssen recommended that the categories of the vehicle shape study be reviewed by referencing the corridor, and that the makers' arbitrary classifications not be used. He proposed grouping the vehicle models that show similar corridors. Some delegates were of the opinion that the lines that identify the corridors are too complicated, and that it is therefore too difficult to specify the categories of cars.

Mr. Janssen countered that the simulation was conducted on the assumption that the variations occur as a matter of course, and that they should reflect real accidents. He recommended we adopt the simple test with narrow variations, and that average values would be acceptable for the time being.

Mr. Ishikawa supported Mr. Janssen's position by pointing out that average values would reflect real circumstances with highest rate of probability, with an added

comment on the difficulty of determining a clear relation between vehicle shapes and impact conditions.

Mr. Lawrence opposed the use of average values, but insisted on the need to extend the reliability to 80% in order to save the lives of 80% of accident victims.

Mr. Janssen proposed using the average plus/minus 1 SD (standard deviation) or the 20% range, temporarily taking into account the three categories (Sedan, SUV, and One-Box), and two areas (Bonnet and Windshield), under the assumption that the results will be confirmed in future studies.

Mr. Ishikawa criticized Mr. Janssen's proposal as being too complex.

However, the committee agreed to accept Mr. Janssen's proposal as a general concept.

#### **CONCLUSION 2 (Action)**

***Ms. Brun-Cassan was asked to convey the committee's request that ACEA provide JARI, NHTSA and RARU with cadaver data for further study.***

#### **CONCLUSION 3**

***The delegates agreed that for the time being, a matrix should be prepared that depicts the "speed ratio" and "head impact angle" to the "bonnet" and "windscreen" for each of the car models classified as "Sedan", "SUV", and "One-Box", using an average plus/minus 1 SD (Standard Deviation).***

***PMHS data are also to be incorporated in the matrix.***

#### **CONCLUSION 4 (Action)**

***Mr. Konosu agreed to prepare the matrix and circulate it among the delegates during the course of the week.***

#### **( 2 ) WAD**

Ms. Brun-cassan proposed that discussion on the WAD be reintroduced, because of the lack of clarity in the conclusions on the logic behind the overlapping zone reached at the previous meeting.

Mr. Ishikawa also questioned the logic behind the decision proposing the overlapping zone, stating that the concept of the overlapping zone must be reconsidered, since a WAD should be defined by "size", and not by "age".

Mr. Mizuno agreed to review the overlapping zone.

Mr. Ishikawa insisted that a WAD to be covered by the child headform ought to correspond to the definition of actual child size. He added that one existing child headform attempts to cover a certain area by using WAD, while the remaining area beyond this WAD should be covered by an adult headform. Mr. Ishikawa supported his statement by saying that we are definitely able to define the zones with a line that divides into two. He insisted that the concept of transition zone is not necessary under test conditions. He then raised objections to its having developed into the argument and to the assumption that the accumulation and the verification of accident data for specifying the range of WAD must be applied to the test method all at once.

Mr. Mizuno questioned the idea of having the test method assume the use of the overlapping zone, indicating that it is not logical to conduct the impact test on the bonnet under common test conditions with both adult headform and child headform impactors. He pointed out that, for example, contact with the bonnet at the same point or near, would involve different speed and energy depending on which headform is used.

Mr. Lawrence pointed out that testing with two impactors within the overlapping zone leads to greater safety for the pedestrian, in addition to the general benefits of an effectively simplified test method.

A lengthy discussion centered on the justification and rationale of supporting an overlapping zone became entangled and failed to produce a new conclusion.

The committee agreed that members' views are to be written in the minutes without changing the Conclusions reached at the last meeting, and instead their choice shall be indicated from options 0, 1, 2a, 2b, 3 for the test conditions following the graphics illustrated by Mr. Janssen. (See Appendix 2)

- Ms. Brun-Cassan expressed support for Option 2b.
- Mr. Lawrence expressed support for Option 1, indicating that overlapping would occur when considering the entire range of car shapes and speed, but not when one

car, one speed, and one pedestrian stance are assumed. So overlapping is caused by variations in speed, car shape and in stance.

He said that if test authorities conduct tests with a velocity of 40km/h, they will insure that protection for all to be secured up to 40km/h.

- Mr. McLean expressed support for Option 1, unless additional data is presented that requires a review of the conditions.

- Mr. Janssen said that the EU delegates support **Decision 8** of the last meeting notes, and would stick with Option 1 until additional data becomes available.

- Mr. Tanahashi said that the Japanese delegates support Option 2 or 3.

- Mr. Akiyama expressed support for Option 2 or 3. He voiced disagreement with Mr. Lawrence, saying that we are supposed to incorporate car shape and speed variation into the concept of overlapping, and that it is unnecessary to introduce the concept that the overlapping zone is transferred on the bonnet.

- Mr. Maki expressed support for Option 2a or 3.

- Mr. Ishikawa expressed support for Option 2 or 3.

Mr. Mizuno replied to Mr. McLean's question regarding today's conclusions, by suggesting the members opinions be entered in the record of the meeting minutes, letting the conclusions of the last meeting stand as is.

### **Day 3 (Thu. 10 May) Honda Pavilla**

(outline only)

The committee discussed on the 2001 Report. Authors of each chapter confirmed their assignment. The committee agreed that this report should be clearly indicated as "Draft" and is to submitted to the IHRA/Steering Committee.

The committee then discussed on the New Terms of Reference for continuation of this project and agreed to submit it to the IHRA/Steering Committee (see

IHRA/PS/197R1).



## Appendix 1

Attendees at IHRA Pedestrian Safety WG 8<sup>h</sup> Meeting, May 8-10, 2001

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## Appendix 2

